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1: *J Appl Toxicol* 1997 Sep-Oct;17(5):337-43

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**Cadmium and selenium in blood and urine related to smoking habits and previous exposure to mercury vapour.**

**Ellingsen DG, Thomassen Y, Aaseth J, Alexander J**

**Department of Occupational and Environmental Medicine, Telemark Central Hospital, Skien, Norway.**

The object of this work was to investigate possible interactions of mercury, cadmium and selenium in humans. Selenium and cadmium in blood and urine were determined in this cross-sectional study of 130 males, of whom 77 had been previously exposed to mercury vapour at a chloralkali plant. Of the participants, 61.5% were smokers and 16.2% were never-smokers. The concentration of selenium in blood (B-Se) was significantly lower in subjects currently smoking more than 50 g of tobacco per week compared to never-smokers, whereas the concentration of cadmium in blood (B-Cd) was significantly higher in all categories of current smokers. In the multiple linear regression analysis, B-Se as a dependent variable was negatively associated with B-Cd, whereas current smoking habits were not included in the model as a predictor variable. In contrast, B-Cd as a dependent variable was positively associated with current as well as previous smoking habits, and negatively with both B-Se and the 'cumulative dose' of previous mercury vapour exposure. The concentration of selenium in blood was also negatively associated with B-Cd in the group of never-smokers (Spearman's  $r = -0.80$ ;  $P < 0.001$ ). In conclusion, these results suggest a depressive effect of cadmium on the concentration of selenium in blood, while smoking alone did not operate as a true predictor for this effect. Furthermore, previous exposure to mercury apparently modifies the concentration of cadmium in blood.

**PMID: 9339747, UI: 97479666**

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